THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 6. FEBRUARY 5, 1949 Vol. 61.

Some Observations on the Significance of Certain Streptococci in Veterinary Practice*

By

J. C. BUXTON, M.R.C.V.S.

Veterinary Investigation Centre, Sutton Bonington

For many years it has been recognised that the streptococci comprise an important genus of disease-producing organisms in human as well as in veterinary medicine. Within this genus is contained a variety of groups and types which differ widely in their habitat, cultural characteristics, and degree of pathogenicity. In comparatively recent times streptococci have been shown to be associated, in different forms, with a considerable range of pathological conditions in animals, and their effects and subsequent identification are, therefore, of some importance in veterinary medicine.

The streptococci were first recognised as being pathogenic to man and to animals in the latter part of the last century, when Rosenbach, in 1884, isolated from suppurative lesions in humans an organism which grew in long chains and to which he gave the name *Streptococcus pyogenes*. Three years later, two French workers reported the experimental production of mastitis in the cow and in the goat by the inoculation into the udder of a streptococcus obtained from a case of clinical mastitis. In the following year, German workers reported on a streptococcus which had been isolated from the lesions of strangles in a horse. In more recent times, chain-forming cocci have been obtained from a variety of pathological conditions in man and in animals.

Classification of the streptococci, although greatly improved during the last 20 years, still presents certain difficulties, and may well have appeared to many earlier bacteriologists as a formidable task. The original observations, which related to morphology and to cultural characteristics alone, were shown, in a fairly short time, to be insufficient as bases of exact classification, for as streptococci continued to be isolated from an increasing range of pathological conditions in humans and in animals, it became apparent that a certain amount of confusion existed, resulting on the one side from the ability of the organisms to change their morphological habits when grown in different artificial media, and on the other from their appearance in a variety of forms from similar types of pathological conditions. The length of chains and the shape of the cells which formed them, afforded by themselves too little information for purposes of efficient classification.

Shortly after the turn of the century, it was shown that some streptococci, when grown in solid media in the presence of blood, were capable of producing clear areas of lysis of varying extent and intensity. The results of this observation, when considered with general morphology, formed a basis of classification and, therefore, of nomenclature, which was used and developed up to comparatively recent times. According to their behaviour in blood media, streptococci were described as haemolytic or non-haemolytic, long- or short-chained, and rounded or flattened in shape. It was noticed, also, by some workers that certain long-chained and evidently pathogenic members of the genus produced a haemolysis of greater area and intensity than did some other strains, with the result that, for a time at least, the degree of haemolysis came to be regarded as an indication of pathogenicity, and although it was not very long before such a classification was shown to possess certain dangers, this did not prevent the application of Greek and Latin labels to the various degrees and shades of haemolysis produced by streptococci grown in blood agar. The terms "alpha" and "beta" haemolysis are still used by many bacteriologists, and they are useful criteria when applied in conjunction with more modern methods of differentiation; but the habit of some earlier workers of using broad terms of description irrespective of the source from which the streptococci had been obtained, did little to assist in classification and tended to produce a certain amount of confusion in later years.

Although the chemical alteration of carbohydrate and other composite media forms a useful method of differentiating streptococci, the greatest advance in the classification of the genus was made in 1928, when Lancefield showed that it could be divided into a number of serologically distinct groups which, for the most part, were related to the source from which the organisms had been derived. Each of these groups possessed a distinctive antigenic structure. Thus the majority of strains obtained from lesions in humans were called Group A; strains isolated from certain cases of chronic bovine mastitis became Group B; and those from some other infections in humans and in animals fell into Group C. Twelve separate Groups are now recognised.

In addition to Lancefield's Groups B and C, streptococci from certain other groups are of interest in veterinary work. Stableforth, writing in the book "Bovine Mastitis" by Little and Plastridge, has compiled a useful table showing the relationship which some of the groups of these organisms bear to mastitis and to disease in other animals. Group D streptococci have been recovered from cattle, horses, goats, and dogs, but appear never to have been associated with clinical mastitis in cattle. Group E has been reported from swine and from dogs. Group G streptococci are pathogens in dogs and have been recovered from other sites, including the normal bovine udder. Groups H, K, and L have been found in bovines, whilst numbers of the latter group have been found also in swine. Group M does not often occur, but has been isolated most frequently from dogs. Group N (*Str. lactis*) is the well-known milk-souring organism.

The streptococci, within Lancefield's classification, which are of most importance to veterinary clinicians are those which fall within Group B (*Str. agalactiae*), and Group C (*Str. equi*, animal *pyogenes*, and *Str. dysgalactiae*). However, in addition to Lancefield's work, which originally was confined mainly to the streptococci of human origin, Stableforth has divided those of bovine mastitis into three groups: Group I (*Str. agalactiae*), which corresponds to Lancefield's Group B; Group II (*Str. dysgalactiae*) which falls within Group C; and Group III, which does not conform to any of Lancefield's groups and is known as *Str. uberis*. In addition to basic grouping of streptococci of both human and animal origin, serologically distinct sub-types are recognised within the groups, but so far these do not appear to be linked in animals to any particularly distinct clinical or pathological changes.

There is little doubt that of primary importance to the veterinarian to-day are the activities of certain streptococci within the bovine udder. Streptococcal mastitis is one of the main problems with which the dairying industry has to contend, and by far the commonest form of this disease is that associated with *Str. agalactiae*. An infection may gain primary entry into a herd in a number of ways, but it is probable that the commonest method is by the introduction of an infected cow, following which the disease can spread through a high percentage of the herd with great ease and rapidity. The clinical manifestations of streptococcal mastitis are too well known to require any enlargement here, and once the disease has become established in a herd, or even in a single cow, its identification presents few difficulties. At this stage the clinician is faced with matters of treatment and the prevention of spread.

It is probably true to say that in the great majority of cases the transmission of mastitis in a herd takes place at the time of milking. Little and Plastridge draw attention to experimental evidence that transmission is connected to some extent with the closing mechanism of the teat, and that any injury or deformity of the sphincter muscle predisposes to infection. There is no doubt that predisposing causes of many kinds play an important part in deciding whether or not an individual udder, or even a quarter, will succumb to infection, and there is ample evidence to show that careless and dirty methods can set the stage within the udder for the entrance and subsequently vigorous action of the streptococcus. Thus any steps towards the prevention or eradication of the disease in a herd are bound to include the consideration of environmental, as well as primary exciting, factors. In this respect there is not yet sufficient evidence to show that a virus is associated with streptococcal mastitis, to act as a debilitating influence and thus to render the udder tissue more suitable for the rapid multiplication of organisms. It is more probable, even in cases in which streptococci can be obtained from a clinically

* Presented to the Derbyshire Division, N.V.M.A., at Sutton Bonington, September 17th, 1948.

normal udder, that the predisposing or secondary cause is lacking in sufficient force in so far as that particular udder is concerned, and in this respect it is necessary to bear in mind the likelihood of some cows enjoying a higher degree of resistance to tissue damage. With regard to the experimental transmission of the disease, Little and Plastridge disagree with the opinion of some workers that it is difficult artificially to induce mastitis by the inoculation of fresh culture into the teat. They state that mastitis can be produced at will with a very minute amount of culture in the active phase of growth, when introduced without irritation beyond the closing mechanism of the teat. However, it is highly probable that the majority of cases of streptococcal mastitis arise as a result of the transference of organisms at the time of milking, together with a sufficient amount of tissue damage to ensure that they are provided with a suitable environment for growth and multiplication.

Some cows, however, show a remarkable amount of resistance to streptococcal mastitis and will remain free from clinical disease for long periods of time, during which they would appear to have been exposed to no less risk than infected members of the same herd. In many instances it is difficult to explain satisfactorily the reasons for such apparent immunity, and it is probable that in these rather rare cases a number of different factors are involved. There are reasons for the belief that some udders display a greater resistance to tissue damage, whilst at the same time the antibacterial properties of milk, and the natural local antibody response which would be set up by the animal to invasion by foreign bodies are probable reasons for any immunity which is shown. Observations following the treatment of a large number of animals which have become reinfected, lead to the supposition that the average cow enjoys little or no lasting immunity to streptococcal mastitis as a result of infection. The possibility of stimulating immunity to streptococcal mastitis by vaccination has been investigated, but at the present time there is not sufficient published evidence to show whether or not this can play a decisive part in the control of the disease.

The main diagnosis of mastitis is carried out almost entirely by clinical methods, and some changes from the normal are of sufficient value and are well enough known for herdsmen to recognise the condition by its early manifestations. It is well recognised that indurations in the quarters and clots in the milk are signs, not only that the disease is present, but also that the organisms have been multiplying in the udder for some time and probably have been afforded ample opportunity to travel to other cows. It is at this stage that the bacteriological examination of milk samples from the remainder of the herd can be of value to expose cows which are in the earlier stages of infection and thus to avoid the possibility of a serious outbreak in the herd. At this stage it is usually sufficient to carry out bacteriological examinations upon bulk samples taken from the four quarters of each cow, and then either to treat infected animals on the resulting information, or to examine quarter samples from infected cows thus revealed.

In most laboratories where bacteriological examinations of milk samples for mastitis are carried out, the technical methods in use are similar. One-tenth of a cubic centimetre of milk from each sample is spread upon the surface of a blood agar plate and this, together with the sample, is incubated for about 18 hours, at which time a small amount of the incubated sample is spread upon the surface of Edwards' medium (blood agar, aesculin, crystal violet) and this is incubated for a further 18 hours, together with the original culture plate, both being examined following the second period of incubation. This method forms a very sensitive test for the presence of streptococci in milk, for Edwards' medium permits, without many of the usual contaminants from an incubated sample, the growth of streptococci which frequently do not appear upon the primary culture, and thus one is enabled to expose infection in its early stages. In general, various streptococci of mastitis produce upon plain blood agar and upon Edwards' medium, fairly typical colonial appearances from which the identity of the organisms can frequently be judged. If necessary, precipitin tests are conducted with specific antisera to indicate the group to which the infection belongs.

The method of taking milk samples for bacteriological examination is a matter of great importance, and every effort must be made to avoid contamination. It happens at times that important milk samples are received at the laboratory in a condition which entirely precludes the carrying out of accurate bacteriological examination. The commonest contaminants of milk samples are coliform organisms, miscellaneous staphylococci, and spreading organisms of the *Proteus* type, all of which are present to some extent in faeces or on the skin. Such contaminants grow in great profusion on culture media and, when present in large numbers, do so often at the expense of important pathogens, even on Edwards' selective medium, with the result that it may not be possible to identify the infection. Milk samples should be drawn into sterile bottles, if possible of the McCartney type with screw caps. The udder and teats of the cow to be sampled must be thoroughly washed and cleaned, and it is a good policy to wipe the ends of the teats with spirit. Two important points to be remembered at the time of sampling are, firstly, that the period during which the bottle remains uncapped must be as short as possible and that during this time the bottle must not be held in an upright position under the cow; secondly, the stream of milk should be drawn from the teat into the bottle at an angle and at no time must the end of the teat be allowed to touch the neck of the bottle. It will be appreciated that such precautions help to ensure that organisms subsequently found in the sample have been obtained only from inside the udder.

Other forms of streptococcal mastitis which arise, although less commonly than that due to *Str. agalactiae*, may be equally serious in their effects and may present the clinician with treatment problems of their own.

Str. dysgalactiae associated with cases of bovine mastitis is a source of much trouble in some herds, but it occurs far less frequently than does *Str. agalactiae*. The cultural habits of this organism have been fully dealt with in the literature on mastitis. Its effects in the udder would appear to vary. Like other organisms it can be present with little or no clinical effect, but, more frequently, and when present in large numbers, it produces an acute type of mastitis, which may persist for a long time. The symptoms of *Str. dysgalactiae* mastitis are usually rapid in onset, more than one quarter of the same cow may be affected simultaneously, the quarter is often hot and painful and there may be difficulty in obtaining secretion from it. These symptoms may continue for a week or more and may end with loss of the quarter. Sub-acute, and even some chronic, infections of the udder have been attributed to *Str. dysgalactiae*, but it is thought by many workers that such cases are often the result of an earlier and more acute attack. There are some grounds for the belief that mastitis associated with *Str. dysgalactiae* is more difficult to treat by intramammary injection than that caused by *Str. agalactiae*, and if this is true it is possible that the reasons are clinical more than bacteriological, and that the more acute nature of *dysgalactiae* mastitis results in pathological changes within the quarter which render contact between organisms and the injected preparation more difficult.

Although *Str. dysgalactiae* is most commonly encountered associated with bovine mastitis, there are reports of its isolation from sites other than the udder. In America it has been obtained from diseased and normal uteri, from a small number of brucella-free aborted foetuses, and from vaginal swabs. In this country Francis has obtained the organism from bovine tonsils, whilst in this laboratory Shand has isolated *Str. dysgalactiae* in large numbers from the testicle of a boar.

In general it can be said that *Str. dysgalactiæ*, whilst not being a common pathogen of animals, nevertheless, as a cause of mastitis, can give rise to serious disease of the udder and may provoke acute symptoms.

Str. uberis, like *Str. dysgalactiae*, is not a common pathogen. It has been found in normal udders and, as Little and Plastridge point out, it can be entirely supplanted in a herd by *Str. agalactiae*. In general this organism sets up a mild and chronic form of mastitis in which the amount of tissue damage is slight. On the other hand, chronic infection with *Str. uberis* can be of great severity and may be clinically indistinguishable from *Str. agalactiae*. As mentioned earlier, this organism does not conform to any of Lancefield's serological groups, and for purposes of classification forms Stabl forth's Group III of mastitis streptococci. I have been unable to find reference to *Str. uberis* having been isolated from sites other than the bovine udder. One has met with clinically acute cases of mastitis which appeared to have been associated with *Str. uberis*, but these are extremely rare.

The differentiation in the laboratory of the various types of haemolytic Group C streptococci is carried out in the main by means of fermentation reactions, which are based upon the effects of the organism upon trehalose and sorbitol. "Animal *pyogenes*" Group C strains ferment sorbitol but not trehalose. *Str. equi* ferments neither of these; while the human strains of the group ferment trehalose but not sorbitol.

With regard to the Group C "animal *pyogenes*" streptococci, the literature does not provide very much information relating to the commonest sites of occurrence. According to Topley and Wilson these organisms have been isolated from respiratory catarrh in horses and from a variety of lesions in horses, cattle, guinea-pigs, rabbits, and so on. The Group C streptococci in general provide a good example of the difficulties encountered in streptococcal classification, for in addition to those members of the group which have been mentioned, it contains also the human Group C strains, and the points of difference between these and the animal strains, including *Str. equi*, are slight. Very few authors have recorded the appearance of Group C "animal *pyogenes*" streptococci in association with bovine mastitis even in single cases. Some American workers report its isolation from a small percentage of milk samples

and from one outbreak in a herd, whilst in Britain Stableforth encountered four cases in the same herd, but there appear to be no recorded instances of extensive outbreaks of this rather damaging type of mastitis. Since 1944 I have been associated with the study of three separate outbreaks of mastitis which were due in the main to Group C "animal *pyogenes*" streptococci. It is hoped to publish details of two of these outbreaks in the near future and it is necessary only to mention here that in each of them clinical and pathological manifestations were very marked, that the incidence of infection in each herd was sufficiently high for it to be classed as a serious outbreak, and that in certain cases an unexpected resistance was shown to treatment with penicillin.

Occasionally there occur outbreaks of mastitis which can be traced to streptococci of human origin, due either to Group A (*Str. pyogenes*) or to the human Group C. Such cases are rare, however, but when they occur they are dangerous to human health and frequently give rise to septic sore throat and scarlet fever, following the consumption of infected milk. There is evidence to show that human streptococci can be conveyed to cows' udders and there can give rise to clinical mastitis.

It is not proposed in this paper to deal at any length with the treatment of streptococcal infection in animals. A great deal of detailed work has been published, particularly from America, in relation to the human and animal sides of the problem, which, in this respect, are closely related. Many preparations have been tested and used over a long period, from diluted disinfectants to the more specific antibacterial preparations. In the earlier years of such work one of the main problems to be solved was that of finding a preparation which would destroy or inhibit streptococci, without injuring the body tissues—a fact which was of great importance in bovine mastitis, where the desirability of maintaining udder activity unimpaired is very strong. The present use of the sulphonamides and penicillin would seem to have provided a solution to some extent. Yet we are fully alive to the limits even of these preparations, particularly in connection with toxicity to the patient on the one side, and drug resistance of the organisms on the other. The basic requirements of the modern treatment of streptococcal infection would seem to be adequate medication, coupled with suitable hygienic precautions, and these are to a great extent facilitated by a knowledge of the exact type of infection with which one is dealing.

Our knowledge of the streptococci has been very considerably increased within recent years, but still is far from complete. Progress has necessarily been somewhat laborious, due largely to the complex structure of the organisms, and often their strange behaviour in the laboratory. A comprehensive basis of study was provided by Lancefield's system of grouping, and by showing that there was a close relationship between group and habitat this worker swept away much of the confusion which had existed previously. Although streptococci from the majority of groups would seem, at various times, to have been isolated from animals, only a selection of these are of frequent occurrence and they succumb fairly readily to modern methods of treatment. In certain cases there would appear to be some possibility of cross infection with streptococci between humans and animals, and when this occurs public health factors may be brought into play.

Discussion

Mr. Wilkinson: Tissue damage would appear to be inseparable from infection and much damage was caused by the careless use of milking machines. In fact, on some farms milking machines were abused rather than used; two machines were enough for one person to operate satisfactorily. He had come across the very small farm where just a few cows were kept—sufficient for the farmer and his wife to milk without outside help; these herds showed a very low incidence of mastitis: indeed such people could, and did, buy cows in the open market whose udders bore evidence of previous attacks of mastitis, and got no trouble whatsoever with them; in many instances such scarred udders, under gentle treatment, healed and became of the soft silky texture which constituted the healthy organ. He thought that penicillin in the udder produced no appreciable effect on the milk yield, although the oily preparations did have some deleterious effect upon the milk itself. He would like to ask if there was any satisfactory method of overcoming skin infection with streptococci.

Mr. Shand mentioned that there was a little experimental evidence to show that age immunity to streptococcal mastitis worked in reverse, first-calf heifers showing the most immunity. Did the essayist think that *Str. dysgalactiae* infection was more common in some areas than *Str. agalactiae* infection, since this would appear to be the case in Kent and also in some certain parts of Scotland? *Dysgalactiae* mastitis associated with so-called summer mastitis would appear to be on the increase, and *Str. uberis* might cause an acute infection of which it was difficult to get rid. *Agalactiae* could be eliminated more or less from buildings and herds, but *dysgalactiae* and *uberis* could be found in the intestinal tract and presented great difficulty. He asked why it was that sterile samples could sometimes be obtained from cows suffering from mastitis.

Mr. Lake asked what was considered to be the most suitable dose of penicillin and whether three infusions of 20,000 units each was deemed to be sufficient. He preferred to administer three consecutive doses each of 100,000 units, particularly in cases of acute streptococcal mastitis. In his district he found staphylococci to be more prevalent than streptococci in cases of mastitis.

Mr. Carr enquired what was the percentage of apparently healthy udders which harboured *Str. agalactiae* and *Str. dysgalactiae*, and whether the organism caused the condition or merely found a suitable medium for multiplication in an unhealthy udder—an udder rendered unhealthy by some other cause.

Mr. Benbow: As a further instance of streptococcal infection in farm animals he had a herd under his care which some years lost many newborn calves and newly calved cows. The cows would calve normally to full time, cleanse normally, and then in two or three days come down with a serious, often fatal metritis. Laboratory advice was sought and the infection was said to be due to the *beta haemolytic streptococcus*. Vaccine was prepared and the trouble was ended by vaccinating all female animals every six months—the only recurrence was last year when one cow showed the same symptoms; upon further enquiry it was found that she has not been vaccinated with all the other cows. In his opinion predisposing causes of mastitis were not essential. He did not think that there had been any lessening of the incidence of bovine mastitis since the introduction of penicillin, but that veterinary surgeons were now consulted in a greater number of cases than they were before it was known that penicillin was beneficial. Nor did he think that organisms developed a resistance to pencillin in the same way as they did to sulphonamides.

Mr. Marshall: He remembered a difficult "wooden tongue" case, which would respond very readily to sodium iodide—clear up a few weeks or months—and then recur. This happened several times until finally the animal was destroyed. Swabs were taken from the retropharyngeal glands and were returned from the laboratory with the report that this was a B.H.S. infection.

He thought that odd cases of mastitis did arise without any predisposing cause and instanced the cases which occasionally arose in freshly calved heifers where there had not been any handling of the udder. He asked the speaker if *Str. agalactiae* was ever present as a saprophyte.

Mr. Sutton: He had encountered a number of cases of apparently sterile mastitis and would like to ask whether the reason for such occurrences was known.

Mr. Smythe: In his opinion tissue damage acted as a predisposing cause for mastitis in isolated cases. In many of the cow byres which he knew in Cornwall, hand milking was the only method and was usually carried out without any hygienic precautions such as the washing of teats or milker's hands, and yet mastitis was far less common in such herds. He wondered whether it was probable that clumsy milkers begat mastitis, and where else the organism existed besides in the udder. Was infection possible through sound skin as well as through injured skin and sores on the teats? Did the udder act as a trap which retained organisms circulating in the blood and coming from infection in other parts of the body, in the same way as the lung might trap organisms and thereby set up a pneumonia?

The Reply

Mr. Buxton: He did not know of any published information which either proved or disproved the theory that mastitis might arise as a result of streptococci from other parts of the body becoming trapped in the udder. There was no doubt, however, that streptococci could and did remain alive for long periods of time outside the udder—on the skin of cows and on the hands of milkers, as well as on the walls and fittings of the byre.

It was certain that tissue damage must in many cases be held responsible as a predisposing cause of mastitis, and whilst agreeing with Mr. Wilkinson that the milking machine, when abused, provided a very potent cause of damage, he would stress that there would seem to be a possibility of even microscopic tissue damage in the udder providing a suitable environment for the multiplication of organisms which would, if unrestrained, themselves provoke further damage. Streptococci on the skin could be overcome to some extent by the frequent use of antibacterial ointments and creams, but it must not be overlooked that pathogenic bacteria in such a position were related almost always to similar ones within the udder, and that there was evidence that as the internal concentration of organisms was lowered, so did the external concentration fall automatically.

He was quite prepared to believe that in some parts of the country *Str. dysgalactiae* was a prevalent cause of mastitis, but had no first-hand knowledge of such areas. Certainly in Surrey and in the

East Midlands, streptococcal mastitis would seem to be associated in the main with *agalactiae*.

It was true, as Mr. Shand had said, that cases of clinical mastitis appeared in which no organism could be found upon culture of the milk or in smears examined microscopically. Recently the speaker had been given the opportunity to examine a large herd in which a proportion was suffering from "sterile" clinical mastitis. This herd was maintained under conditions of perfect hygiene and left nothing to be desired from the most fastidious in the way of cleanliness, yet clots appeared in the milk of different cows at different times, whilst bacteriological examinations revealed no significant organisms. The herd was milked three times a day by machine, and he wondered whether this could be one of the rare cases of udder irritation and fatigue with bacterial contamination held in check.

In reply to Mr. Lake he would say that in many cases it had been shown that three daily doses each of 20,000 units of penicillin was not sufficient, and he would suggest not less than 100,000 units at each dose.

He feared that he could not give Mr. Carr figures to show the percentage of apparently healthy udders which harboured *Str. agalactiae*, but he did not think that it was very high. However, the speaker was one who believed that primary injury, however slight, was an important precursor of bacterial mastitis.

Pneumonia in Sheep Associated with Infection by a Pasteurella-like Organism

By

DONALD CAMPBELL

(VETERINARY DEPARTMENT, CORPORATION OF GLASGOW)

R. S. F. CAMPBELL *and* L. DROMEY

(DEPARTMENT OF ANIMAL PATHOLOGY, GLASGOW VETERINARY COLLEGE)

The occurrence of pneumonia in sheep associated with *Pasteurellae* has received only occasional mention in the literature and is, indeed, a subject quite rare amongst British publications. The report on Diseases of Sheep (N.V.M.A., 1944), however, states that such a disease is "not uncommon," especially in North Wales where it may assume enzootic proportions. Overcrowding and dry, cold weather are said to be likely predisposing factors, whilst "carrier" animals may play a part in diffusion. The causation is not yet completely understood but the repeated isolation of a Pasteurella-like organism from affected animals may be of some significance, and it is thought that a virus may be involved.

The following outbreak occurred in a flock of 24 pedigree Blackface tups just after they had been brought indoors in the month of December to be concentrate-fed in preparation for spring showing.

As far as could be ascertained (including an examination of the flock records over the previous three years) the history was as follows:

Lambs born in April on lowland pasture appeared healthy except for an occasional case of clinical "swayback" and they thrived most satisfactorily until shortly after weaning. At that stage ewe lambs were left on the same land or were transferred to upland grazing and in both situations continued to thrive. Tup lambs, on the other hand, were folded on cabbage for two months and then brought inside to be fed on concentrates. In an average of ten days after housing, the tups developed a cough similar in character to that of "hoose" but occurring only when they were disturbed or excited. The previous two years had seen, respectively, six and five deaths, the remaining animals making a clinical recovery. According to the flock-master, however, after they were sold in the following spring and had progressed favourably for a few months, some again became ill and died, and the *post-mortem* findings were said to resemble those of chronic pleuro-pneumonia with adhesions.

In the outbreak here recorded, about seven days after the development of coughing among the tups, five animals manifested the signs of acute pneumonia with marked dyspnoea and temperatures of 106° F. to 107° F. There was also a frothy discharge from the mouth and the conjunctival blood vessels were injected. Two animals died and the relevant autopsical and bacteriological findings are described below. To the other three sulphapyridine was administered *per os* in an initial dose of four grammes followed by two grammes every six hours over three days. Recovery was gradual.

Swabs were taken from the throat of (*a*) the three clinically recovered tups; (*b*) four others which were coughing and (*c*) six unaffected ewe-lambs. *Pasteurellae* were recovered by culture in all 13 cases.

When the first result of cultural examination became known, those animals still coughing were treated orally with sulphathiazole (initially one gramme per ten pounds of body weight followed by one gramme per 30 pounds of body weight every six hours for three days). The animals were put on a semi-free range and were again fed green-stuffs, notably cabbage. Clinical recovery was complete in nine days.

(Seven months after this outbreak further illness had not occurred in either the retained tups or those which had been sold during that period).

PATHOLOGICAL EXAMINATION

Subject: (Nos. 8856 and 8857). Two Blackface tups, aged seven months.

Autopsy: (twelve to eight hours *post-mortem*).

There was a moderately large quantity of sero-haemorrhagic fluid in all the great serous cavities and slight diffuse congestion in the walls of the rumen, reticulum, omasum, abomasum and intestine. Degenerative renal change was extreme, each kidney being soft, friable and of a light biscuit colour. (It is considered that such a finding may represent *post-mortem* change.) In No. 8857 there were subcapsular petechiae in the right kidney. In both animals, active hyperaemia was most pronounced in the thoracic organs and, in No. 8856, vascular congestion was marked in the subpleural connective-tissue and intercostal musculature. There were scattered subepicardial petechiae. No. 8857 showed consolidation of only the right apical lobe but in No. 8856 there were widely distributed, well-defined pneumonic patches, up to one inch or more in diameter, in both lungs.

A subcutaneous haemorrhage of approximately one inch in diameter was present in the right thigh of No. 8856.

Histopathology.—The methods of staining the sections were Ehrlich's haematoxylin and eosin; methyl violet-neutral red (Gram); and Ollett's modification of Twort's double stain. The two latter methods were used to demonstrate bacteria.

For microscopical examination a portion of the consolidated lung tissue together with specimens of liver and myocardium were taken from No. 8856.

In addition to the extreme generalised vascular congestion, the lung contained circumscribed areas consisting of groups of alveoli filled with cells, mainly of the neutrophil polymorphonuclear type. Necrosis was pronounced, especially towards the centres of these consolidated foci. Involved bronchioles were almost completely denuded of their epithelium and these desquamated cells, together with various mononucleated cells and polymorphonuclear leucocytes, formed dense bronchiolar plugs. Many adjacent alveoli were in a collapsed state. In consequence of sero-fibrinous exudation there was marked exaggeration of both pulmonary septa and the subpleural connective-tissue, where too, a few histiocytes and polomorphonuclear leucocytes were found. Most of the larger blood vessels exhibited a peripheral layer of histiocytes.

In the consolidated portions of the lung, bacteria were most numerous in the central areas of necrosis. In the alveolar plugs were observed small clusters of Gram-negative bacilli, about two microns long and approximately 0·75 micron broad, which occurred singly and in short chains of up to four organisms. Some of the bacilli exhibited bi-polar staining. Elsewhere in the lungs, however, Gram positive Clostridial forms, often in long chains, prevailed. Similar bacteria were encountered in the liver and myocardium, but not anywhere more abundantly than in the lung and, especially, the unconsolidated tissues and the septa. These large bacilli were probably terminal, or even *post-mortem*, invaders of the lung.

BACTERIOLOGICAL EXAMINATION

In addition to culturing on blood-agar plates, bacterial films were made directly from the affected lung tissue, liver and heart blood. These films were stained, using Gram and Leishman's stain respectively. While not seen in the liver and heart blood, typical bi-polar staining short rods (average size 1·5 microns in length) and existing singly and in pairs, were numerous in the lung smears. The bi-polar staining character of the organisms was particularly well seen in the films stained by Leishman.

The blood agar plates having been incubated aerobically at 37° C., were examined after 24 hours. Those incubated from the affected lung substance of both sheep showed practically a pure culture growth of numerous tiny grey colonies. In addition, the heart blood from case No. 8856 gave rise to a similar though much less numerous colony growth. The plates stroked with liver inocula

were negative. Films of the colony growth were prepared and stained by Gram and also by Loeffler's methylene blue. Microscopical examination revealed short ovoid bacilli, Gram negative, exhibiting bi-polar staining. From a typical colony subcultures were made and a more detailed study of the organisms was thereafter carried out.

Morphology and Staining

In addition to those features already described other characters were noted. On repeated cultivation, particularly on solid media, the bi-polar staining characteristic largely disappeared and the cells tended generally to become more elongated—some up to three microns in length. Motility was not observed. Some cells seemed to show a rather ill-defined capsular material while others showed no evidence of capsular formation.

Cultural and Biochemical Characters

Nutrient agar plates were incubated aerobically at 37° C.: after 24 hours small (average size 0·75 mm.) round, discrete, greyish translucent colonies developed. With further incubation, *e.g.*, four days at 37° C., these colonies continued to grow up to 3 mm. in diameter, became less translucent and developed a slight butyrous consistency.

Horse blood agar plates, two days at 37° C.: slightly better growth than in nutrient agar was observed; no haemolysis but the whole plate was browned. A suspension of the organisms incubated with sheep's red cells produced no evidence of haemolysis.

Gelatin stab, seven days at 22° C.: very delicate filiform growth developed in some of the tubes; no liquefaction.

McConkey plates, four days at 37° C.: a number of colonies, pinhead in size, and barely visible to the naked eye developed; many more were apparent under the hand lens (4-magnification).

Nutrient broth, two days at 37° C.: moderate turbidity with a slight deposit; later the growth settled leaving the medium clear. The addition of serum to the broth enhanced the growth and gave rise to a very viscous deposit. Serum broth cultures incubated at 22° C. for four days gave rise to only a very faint cloudiness in the medium.

Fermentation reactions were carried out in the usual way, using peptone water as a basic medium and adding the test substances to a concentration of 1 per cent. Bromthymol blue was used as indicator. The tubes were incubated at 37° C. and tested over a period of ten days. No gas was produced from any of the carbohydrates. Acid was formed in dextrose, sucrose, maltose, mannitol, surbitol and xylose. No change occurred in lactose, arabinose, salicin, dulcitol, glycerol and inosite. Litmus milk remained unaltered. The production of indole and hydrogen sulphide could not be demonstrated. Methyl-red and Voges-Proskauer reactions were negative. Methylene-blue reduction was positive. Catalase was produced.

The organism was heat labile, being killed off at a temperature of 60° C. in a few minutes.

In vitro experiments using various strengths of penicillin failed to reveal any significant antibiotic effect on the organism's growth.

Experimental Pathogenicity

Mouse: Intraperitoneal injection of 0·5 ml. of 24 hours broth culture proved fatal to two mice on the third and fourth days respectively. Congestion of the visceral organs and lungs was noted on *post-mortem* examination. Bacilli were numerous in films made from the blood and liver.

Rabbit and guinea-pig: Two rabbits were injected peritoneally using 1 ml. of 24 hours broth culture. One rabbit became ill on the second day, was off its food and showed respiratory symptoms. Later, however, it recovered. The rabbits were killed after two and three weeks respectively but *post-mortem* examination revealed no lesion of importance. Two guinea-pigs, similarly inoculated, remained in health and no lesions were noted on *post-mortem* examination, when the animals were killed off after three weeks.

DISCUSSION

It seems significant that the animals were housed about ten days before the development of the pneumonia. Inasmuch as this was not the first year in which pneumonia developed some time after the animals were housed, the mode of husbandry was suspected as an important predisposing cause of the condition just as in an outbreak reported among Icelandic sheep. In the latter case, however, Dungal (1931) stated that losses were experienced only during the housing period although they were more numerous in April and May, *i.e.*, towards the end of the sojourn indoors. Our experience of the past two years indicates that clinical recovery can be followed some months later by a recurrence of the pulmonary condition.

Whilst but a few cultural examinations were carried out for the presence of *Pasteurellae* in the throats of both affected and unffected ewes, our results indicate that some animals may become "carriers."

In one of our cases, the pneumonia involved the whole of one lobe, but in the other case it was distinctly lobular in its distribution and distinguished, above all, by central necrosis. It is noteworthy that this latter feature has been encountered by a number of other investigators.

The characteristics of the isolated organism, in so far as they were studied here, simulate, in the main, those of *Pasteurella septica* as described by Topley and Wilson and Bergey. It differed, however, in certain respects, *e.g.*, in its low virulency (c.f. Dungal's strain) for laboratory animals. Much of the work in this field, however, suggests that virulence is not a stable property of these bacilli but is subject to much alteration. In addition, the organism failed to produce indole and hydrogen sulphide; Maltose was weakly attacked and a slight growth developed on McConkey agar. It is of interest to note that some of these peculiarities were also exhibited by the Icelandic strain.

The favourable response on the part of three housed animals to sulphapyridine seems to recommend such treatment. Limited though the use of sulphapyridine and sulphathiazole was in this work, the results would appear to qualify the statement that, in sheep, these substances "do not appear to be worth using" (Ogilvie, 1948), but, since untreated controls were not maintained, one cannot be too dogmatic about the efficacy of these drugs. As Ogilvie points out, some of the later sulphonamides, *e.g.*, sulphamethazine, by virtue of their greater absorption and slower excretion maintain a more effective level of blood concentration and for a longer period of time. This fact has already been elucidated by Francis (1947), who stated, however, that sulphathiazole would merit the first choice in combating infection by *Pasteurella septica*, were it not for the necessity of frequent high doses and the consequent danger of toxic effects. Yet, it must be admitted that the therapeutic value of the sulphonamides may not be merely a matter of efficiency of absorption and rate of excretion. There is, of course, the question of the activity of the drug in *vivo*.

Summary

(1) An acute pneumonic disease of recently housed sheep is described in its clinical, pathological and bacteriological aspects.

(2) The proximate cause would appear to have been a Pasteurella. A limited cultural examination of unaffected animals in the flock suggested that some animals may have been "carriers" of the organism. The practice of housing the animals seems to have been a predisposing cause of some moment.

(3) Sulphapyridine and sulphathiazole were used in treating the condition, each with apparent success. The relative values of various sulphonamides in such cases are briefly discussed.

Acknowledgment.—We are indebted to Prof. J. W. Emslie for his guidance in the preparation of this paper.

References

Bergey, —. (1939.) Manual of Determinative Bacteriology; 5th ed.
Dungal, N. (1939.) *J. comp. Path.* **44.** 126.
Francis, J. (1947.) *Vet. Rec.* **59.** 10.
Ogilvie, D. D. (1948.) *Ibid.* **60.** 12.
Topley & Wilson. (1946.) Principles of Bacteriology and Immunity; 3rd ed.

LIVESTOCK EXPORT GROUP

At the Seventh Annual General Meeting of members of the Livestock Export Group held on January 20th, Mr. A. B. Baldwin, M.C., M.P., was elected Chairman and Mr. F. Nevill Matthews, M.B.E., Vice-chairman, for the ensuing year.

The proposal that a levy, in order to finance the Group, be made on all livestock and bloodstock exported from the country was discussed but was rejected on a final vote, and the motion that subscriptions be increased was carried. Representatives of breed societies were asked to refer the matter to their Councils and report back by March 31st, 1949, when it would be reviewed by the newly elected committee.

* * * * *

NATIONAL FARMERS' UNION LEADER

At the three-day Annual Meeting of the National Farmers' Union, held in London last week, Mr. James Turner, who received his knighthood in the New Year's Honours List, was unanimously re-appointed President.

CLINICAL COMMUNICATION

Transplanting the Ureters in the Dog

By

ROBERT S. TOWNSON, M.R.C.V.S.

Carlyon Bay, St. Austell

and

DORIS H. CRAWFORD, M.R.C.V.S.

Subject—Four-year-old golden cocker spaniel dog.

History.—On August 19th, patient was seen following a street accident. Damage was confined to severe abdominal bruising and shock. Recovery was slow, and it soon became evident that the bladder had been damaged. Retention of urine was indicated by extreme distension of the bladder, whilst from the penis there was the continuous drip of overflow, the two conditions being simultaneous. On rare occasions the bladder was completely emptied.

X-ray examination revealed nothing more.

In spite of treatment with infra red rays, high frequency stimulation, chelidon and penicillin, and parasympathetic stimulants, the patient became progressively worse. It was presumed that abdominal adhesions and organising blood clots in the bladder were the cause of the trouble.

First Operation.—On October 14th, laparotomy was performed under nembutal intravenous anaesthesia. Abdominal adhesions were broken down, but these were obviously of little consequence. The bladder, grossly thickened, inflamed and distended, was opened and emptied of urine and blood clot. 100,000 units of penicillin were instilled into the bladder and it was sutured up again with 000 catgut. The abdominal wound was closed with eversion sutures, using No. 3 nylon.

After Effects.—The patient made no headway and the same symptoms prevailed. Parasympathetic stimulants had little effect. It became obvious to us that the trouble must be due to paralysis of the bladder and/or its sphincter.

On October 22nd it was decided to operate again and attempt transplanting ureters into the bowel.

Anaesthesia.—Morphine sulphate (¼ grain) and inhalation ether. This method was preferred to nembutal or continuous pentothal in view of (*a*) patients' condition of near collapse; (*b*) the fact that it had received a full anaesthetic dose of nembutal only one week before.

Operation

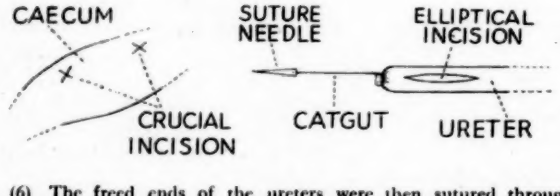
(1) The operation wound of the previous week was re-opened and the bladder brought into the opening.

(2) The ureters were ligated at their distal ends, separated from their supporting connective tissue and then severed close to the bladder.

(3) The freed ends of the ureters were then clamped with artery forceps to prevent flow of urine.

(4) The bladder was again emptied as before, thoroughly swabbed out, instilled with 100,000 units penicillin and sutured up with 000 catgut. The bladder was then returned to the abdominal cavity.

(5) The caecum was then brought into the incision and packed off with swabs. Two small crucial incisions were then made along one aspect of the caecum.



(6) The freed ends of the ureters were then sutured through with No. 2 catgut and a suture needle affixed to the ends. An elliptical incision was made in each ureter as close to the end as possible.

(7) Each ureter was then drawn by its catgut attachment through the crucial incisions in the caecum. The suture needle was pushed across the caecal lumen, through the opposite wall of the caecum and then anchored to the serosa at (A) (see diagram).

(8) With 000 catgut the ureters were then sutured to the caecum at their entrance *via* the crucial incisions (B) (see diagram). Two sutures were inserted through the serous membranes of the ureter and caecum at each site. This prevented seepage and acted as a further anchor.

(9) The whole area was thoroughly cleansed with saline, 200,000 units penicillin were instilled into the abdominal cavity and the abdomen was closed with No. 3 nylon eversion sutures.

After-treatment.—150 c.c. glucose saline was administered every six hours for 24 hours; also penicillin in oil, 125,000 units every 12 hours for seven days.

Within 12 hours the patient sat up and drank a little boiled glucose water, and within 18 hours he passed faeces-stained urine per rectum. During the first 36 hours the patient vomited frequently but administration of sodium bicarbonate and brandy checked this. Three days afterwards the dog was looking for food and ate a little minced liver greedily. By now, urine was being regularly passed per rectum.

Sutures were withdrawn in 12 days and at this stage the patient could pass faeces-stained urine in one action and semi-solid faeces in another, *i.e.*, both actions being independent of each other.

At 14 days he vomited faecal material but a mild saline laxative corrected this. He was sent home at 17 days.

To date, the dog is making slow but steady progress and there seems no reason why he should not continue for several years.

Conclusions

Indications for this operation may be bladder tumours, paralysis of the bladder, chronic painful cystitis which will not respond to any other treatment and probably certain affections of the urethra.

Finally, we should like to thank Mr. G. C. Knight, M.R.C.V.S., for his very valuable suggestions and advice.

ABSTRACTS

[Pastures Old and New: the Animal's Point of View. Stapledon, Sir R. George. (1948.) *J. Minist. Agric.* **55.** (No. 6.) 231-234.]

Stapledon records that since April, 1947, he has been able to undertake studies of the grazing behaviour of animals on leys and on permanent pasture. He emphasises that the modern ley frequently consists of but one grass and one clover species, and seldom of more than six members of these two natural orders, and that the "better" the ley the fewer the "weeds." Moreover, the essence of "good" ley management is to force the animals to eat only herbage in one stage of growth, *i.e.*, the fast-growing stage. Permanent pasture, on the other hand, may contain well over a dozen and often over 50 different species belonging to several different natural orders, and owing to its normally slower rate of growth, its ingestion by stock usually involves the consumption of more mature stages of herbage and correspondingly lower intakes of water.

The warning is given that the evaluation of pastures by milk yield or live-weight increase without reference to reproduction can lead to erroneous conclusions. "Only at our peril can we ignore the fact that in certain districts and on certain farms difficulties have undeniably presented themselves in respect of the reproductive cycle."

Whereas the sheep can select individual plants without great difficulty, the cow tends to select in patches. Stapledon believes that the correct practice in the case of bovine animals is, therefore, to offer them contemporaneous access to highly contrasting patches. He refers to the work with sheep at Cahn Hill of Boulet, who found that on wet days there was a marked preference for grazing rough native vegetation, whereas in more normal weather conditions, the lush reseeded pastures were preferred but the native vegetation was never entirely neglected. His own more recent studies, mainly with dairy cattle, have indicated similar trends. The tentative conclusion is, therefore, drawn that animals, if given the chance, graze with discretion, and that they move from one type of vegetation to

another not only in search of particular nutritional constituents but also because they sense the need of a particular balance between "eatable" water (wet matter) and dry matter, or between fibre (and fibre in different stages of growth) and high quality, readily digestible nutrients, and so on. Stapledon submits that it is just as important to give the animal access to vegetation in all stages of maturity as to give it a sufficiently wide range of plants with different inherent and specific chemical properties.

In his final paragraph, Stapledon refutes any suggestion that he is now hauling down his colours and arguing against the ley. He emphasises that it is a matter of balance and suggests that the information we require concerns the correct ratio in which different contrasting types of herbage should be presented at the same time to the grazing animal. The opinion of various practical farmers is given to the effect that, of the total grass on a farm, from one-sixth to one-third should be permanent.

A. N. W.

* * * * *

[Effect of Streptomycin on *Pasteurella multocida* in vitro and on Fowl Cholera in Turkeys. McNeil, Ethel, & Hinshaw, W. R. (1948.) *Cornell Vet.* **38.** 239.]

The authors report favourable results with streptomycin in a series of *in vitro* and *in vivo* experiments against *Past. multocida*. The streptomycin was used in the form of the calcium chloride complex, 1 μg. being equivalent to 1 "S" unit.

In the *in vitro* experiments, the compound was tested against ten strains of *Past. multocida* derived from four species of birds. It was found that the inhibitory action of streptomycin was incomplete in beef infusion broth cultures, this finding being in agreement with that of previous workers who report that NaCl and phosphorus both act as inhibitors of this antibiotic. In nutrient broth, 1·0 μg./ml. completely inhibited the growth of the organism.

A strain of *Past. multocida*, found to be moderately sensitive to streptomycin, was used to produce an acute infection in adult turkeys. In this experiment controls died within 24 hours. It was found that 25 900 units of streptomycin per kg. body weight prevented mortality if given just previous to or at the time of inoculation. If given six to 24 hours later, there were carriers and some birds which showed marked loss of weight and developed joint abscesses.

J. G. C.

* * * * *

[Sulphathiazole as an Aid to the Control of Fowl Cholera in Chickens and Turkeys. DeVolt, H. M. (1948.) *Amer. J. vet. Res.* **9.** 215.]

The author summarises his findings as follows:—

(1) Experimental fowls receiving 0·5 to 2·0 per cent. sulphathiazole in mash exhibited a significant degree of resistance against artificial exposure to fowl cholera.

(2) Sulphathiazole administered at the 2 per cent. level proved toxic for laying chickens in three to four days.

(3) Average blood levels at 1·65 to 4·67 mg. per 100 c.c. blood appeared effective against artificial exposure which produced high mortality rates in control groups.

(4) The estimated group M.L.D. for small groups of chickens receiving sulphathiazole at the 2 per cent. level was 128 times that of the controls.

(5) Fowl cholera has occurred after the period of medication, both in experimental and naturally infected chicken flocks.

(6) Resistance to fowl cholera is a variable factor. Some fowls survived a dose two to four times greater than that fatal to others.

J. G. C.

Weekly Wisdom

"Why are you forever humming that tune?"

"Because it haunts me."

"No wonder it haunts you; you are murdering it."

That is not repartee.

On the other hand, let me recall to you an anecdote concerning Benjamin Franklin. The great American had been sent as Minister to France. When he was in Paris he sought out Edward Gibbon, the distinguished English historian who was the author of The Decline and Fall of the Roman Empire. *The brief conversation went something like this:—*

"I have the highest respect for your genius and abilities," declared Gibbon, "but I can have no communication with a revolted subject."

"And I have the highest respect for your genius and abilities," replied Franklin. "Whenever you wish to begin a new history, The Decline and Fall of the British Empire, *I shall be glad to afford you the materials."*

That is repartee.

[*The Art of Conversation.* By Milton Wright. (1936, *London and New York: McGraw-Hill.*)]

REVIEW

["So You Want to Buy a Dog." By E. Holland, with Illustrations by J. F. Horrabin. London: E. A. Sharp; distributed by Background Books, Ltd, Cobham House, 24-26, Blackfriars Lane, London, E.C.4. Price 2s. 6d.]

Writing under the pen-name of E. Holland, Mr. Lustvig-Lendva, of Hendon, has—in this little book—rendered a service both to dog-owners and his fellow veterinary surgeons. From the profession's point of view, he is to be commended especially for poking fun at that old enemy of ours—"the lady next door" who has bred dogs for years and does not hesitate to broadcast her ignorance in the form of advice to all her unsuspecting acquaintances. To dog-owners who have been under the influence of such a person, this book should serve as a valuable mental cathartic; of the pleasant-to-take, sugar-coated kind. There is much useful advice offered in an amusing way, and an attempt is made to give the dog-owner at any rate an approach to the understanding of the simpler diseased conditions commonly met with. This is essentially a book for those clients who, if they are to learn anything, demand entertainment at the same time—a requirement which the well-known illustrator, J. F. Horrabin, admirably assists in meeting.

IN PARLIAMENT

Docking, Blood Sports, and Pet Shop Bills

As the result of the first ballot for private members' Bills since 1939, held last week, four of the successful 25 M.P.s (out of 353) have presented Bills of particular interest to our readers.

The Docking and Nicking of Horses Bill, presented by Sir Dymoke White, will have its Second Reading on Friday next.

Mr. Seymour Cocks, who was third on the list, introduced a Bill to abolish coursing and a similar Bill to deal with foxhunting is in the care of Mr. Fairhurst, who is eighth on the list. The group of members who are interested in abolishing blood sports feel that by separating coursing and foxhunting in this way they have increased their chances of abolishing coursing, since they feel that many members will support the first Bill who will not support the Bill relating to foxhunting.

Brigadier Peto, who drew sixth place, presented the Pet Shop Bill, which relates to control of the sale of pet animals; aims at having pet shops regularly inspected and seeing that animals are kept under good conditions.

The 25 M.P.s who were successful in the draw now have an opportunity of introducing their Bills for discussion on the seven Fridays, beginning February 11th, which have been set aside for the purpose. The first seven of the successful members have the right to claim priority of their Bills on these days.

. . . . . .

Particulars relating to the above Bills and others, in order as presented by private members in the House on Friday of last week, are as follows:—

Protection of Animals (Hunting and Coursing Prohibition) Bill.

"To prohibit the hunting and coursing of certain animals for purposes of sport; and for purposes connected therewith," presented by Mr. Cocks; supported by Mr. Alpass, Mr. Fairhurst, Mr. Anthony Greenwood, Mr. J. B. Hynd; Mr. Kenyon, Mr. McGhee, Mr. Randall, Mr. Royle, Mr. Sargood, Mr. Sparks and Mr. Symonds; read the First time; to be read a Second time upon Friday, February 25th, and to be printed. [Bill 52.]

Baiting of Animals Bill.

"To make it unlawful to have possession of any animal trained or prepared for use in fighting or baiting or of any instrument or appliance designed or adapted for use in connection with the fighting or baiting of an animal," presented by Sir William Darling; supported by Brigadier Peto, Mr. Basil Nield, Major Ramsay, Mr. Dodds-Parker, Mr. Peter Thorneycroft and Mr. Osborne; read the First time; to be read a Second time upon Friday, March 4th, and to be printed. [Bill 53.]

Pet Animals Bill.

"To regulate the sale of pet animals," presented by Brigadier Peto; supported by Mr. Keeling, Mr. Wigg, Mr. Shurmer, Mrs. Leah Manning, Mr. Ward, Brigadier Prior-Palmer, Miss Colman, Mr. Price-White, Sir Waldron Smithers, Lt.-Col. Boles and Sir George Harvie Watt; read the First time; to be read a Second time upon Friday, March 18th, and to be printed. [Bill 55.]

PROHIBITION OF FOX HUNTING BILL

"To prohibit the hunting of foxes for purposes of sport; and for purposes connected therewith," presented by Mr. Fairhurst; supported by Mr. Alpass, Mr. Anthony Greenwood, Mr. J. B. Hynd, Mr. Kenyon, Mr. McGhee, Mr. Randall, Mr. Royle, Mr. Sargood, Mr. Sparks and Mr. Symonds; read the First time; to be read the Second time upon Friday, March 11th, and to be printed. [Bill 57.]

COAL MINES (PROTECTION OF ANIMALS) BILL

"To amend certain provisions in the Coal Mines Act, 1911, relating to the care and protection of horses and other animals," presented by Mr. Osborne; supported by Mr. Sidney Shephard, Mr. William Paling, Mr. Thomas Brown, Sir William Darling, Mr. Peter Thorneycroft, Mr. Watkins and Mr. George Thomas; read the First time; to be read a Second time upon Friday, March 18th, and to be printed. [Bill 64.]

DOCKING AND NICKING OF HORSES BILL

"To restrict docking and nicking of horses and to prohibit the importation of horses with docked or nicked tails," presented by Sir Dymoke White; supported by Sir Ralph Glyn, Lt.-Col. Bolis, Colonel Gomme-Duncan, Mr. Philips Price, Brigadier Thorp, Brigadier Prior-Palmer, Colonel Clarke, Sir Jocelyn Lucas, Mr. Dodds-Parker and Sir Wavell Wakefield; read the First time; to be read a Second time upon Friday, February 11th, and to be printed. [Bill 65.]

SLAUGHTER OF ANIMALS (SCOTLAND) BILL

"To extend the provisions of the Slaughter of Animals (Scotland) Act, 1928, to the slaughter of swine," presented by Major Ramsay; supported by Sir William Darling; read the First time; to be read a Second time upon Friday, February 11th, and to be printed. [Bill 70.]

* * * * *

Questions

CATTLE DISEASES (USE OF ANTRYCIDE)

Mr. HALE asked the Secretary of State for the Colonies whether he will make a statement as to the use of antrycide and its effect on meat production in Africa.

Mr. CREECH JONES: Field trials conducted throughout 1948 in Kenya, Uganda and the Sudan showed that a single treatment with the new drug cures the two most important trypanosome diseases in cattle, *T. congolense* and *T. vivax*. It has also proved effective against the trypanosome diseases which affect camels, horses, dogs and pigs. In addition to its curative properties, antrycide affords protection against the trypanosome diseases; trials are continuing to establish the duration of the period of protection.

In the meantime, limited supplies of the drug have been made available to Government Veterinary Departments in Africa. It is already in use in Kenya, Uganda and Nigeria (as well as in the Sudan). I have asked Governors to keep me informed of the use to which these supplies are put and the results obtained.

The effectiveness of the drug, particularly its prophylactic properties, will, it is hoped, improve the prospect of increased meat production in areas of Africa hitherto closed to domestic animals or precarious for them. I am at present examining, in consultation with my Advisers and with Colonial Governments, the many veterinary, agricultural, administrative and other aspects of the development of animal husbandry in Africa made possible by the discovery of the drug. Initially it will be used to afford protection on stock-routes and during seasonal migrations, but as supplies become more plentiful it is proposed to use it in combination with other methods of control to expand the present cattle-rearing areas. I am not in a position at this stage to estimate its ultimate effect on meat production in Africa.

. . . . . .

ANIMAL SLAUGHTER (JEWISH METHOD)

Mr. STOKES asked the Minister of Food what proportion of meat killed in this country is killed by the kosher system; and what steps he has taken to assure himself that no cruelty attaches to this method.

Mr. STRACHEY: The number of animals slaughtered by the Jewish method is not separately recorded but is about 2 per cent. of the total. There is some difference of opinion among experts about the degree of suffering caused by this method as compared with that caused by the use of the humane killer.

. . . . . .

HORSES (EXPORT)

Mr. DODDS-PARKER asked the Minister of Agriculture whether he will introduce legislation amending the Exportation of Horses Act, 1937, for the purpose of increasing the value under which a horse may not be exported from this country from £25 to £100.

Mr. T. WILLIAMS: I am not prepared to increase the figure to £100 since that would unduly restrict the export of horses for work. Some increase in the figure specified in the 1937 Act may, however, be desirable, and I am arranging for this matter to be considered.

Mr. SPARKS asked the Minister of Agriculture what are the weekly shipments of horses to Belgium and other European countries; and what steps he is taking to prevent the export of horses for slaughter.

Mr. T. WILLIAMS: For 1948 the average was 39 horses a week to Belgium and 43 a week to other European countries. Under the Diseases of Animals Acts, 1894 to 1937, no horse can be exported until it has been examined by a veterinary surgeon and certified as fit for travel and suitable for work. The value of the horse must also exceed a specified figure. In addition, no licences are granted at the moment for the export of horses to Belgium unless the Belgian importer gives a written guarantee that the horses are required for work and will not be slaughtered.

Sir T. MOORE asked the Minister of Agriculture whether further arrangements will be made with the Belgian Government whereby horses from this country destined for slaughter in Belgium shall in every case in future be examined here by a veterinary surgeon, on behalf of the Belgian Government, slaughtered, and their carcases sent over with the head, trachea and lungs, as was the case in the past.

Mr. T. WILLIAMS: Such an arrangement is unnecessary, since permits to export horses to Belgium are given only in those cases where the importer has guaranteed that the animals are required for work and not for slaughter.

. . . . . .

HORSE POPULATION

Sir T. MOORE asked the Minister of Agriculture the total horse population of England, Scotland and Wales, respectively.

Mr. T. WILLIAMS: The total horse population on agricultural holdings in September, 1948, was as follows:—

	Horses used for agricultural purposes (including mares for breeding)	*All other horses*
England	317,700 ...	120,000
Scotland	73,000 ...	22,300
Wales	54,500 ...	24,600

In addition there were last year 105,000 horses in England and Wales and 10,000 in Scotland used for urban work.

NOTES AND NEWS

Diary of Events

Feb. 8th.—Scientific Meeting of the Zoological Society of London, Regent's Park, N.W.8, 5 p.m.

Feb. 8th.—Royal (Dick) Veterinary College Annual Ball.

Feb. 9th.—Meeting of the Editorial Executive Sub-Committee, 36, Gordon Square, W.C.1, 2.30 p.m.

Feb. 12th.—Meeting of the Biochemical Society at the Westminster Hospital Medical School, 17, Horseferry Road, London, S.W.1, 11 a.m.

Feb. 16th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, 1, Wimpole Street, W.1, 5 p.m.

Feb. 18th.—Meeting of the Sussex Division, N.V.M.A., at Brighton (Old Ship Hotel), 2.30 p.m.

Feb. 18th.—Annual meeting of the North of Ireland Division, N.V.M.A., at The Farm, Stormont, 2.30 p.m.

Feb. 23rd.—Annual Meeting of the South Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 2.30 p.m.

Feb. 25th.—Liverpool University Veterinary Society Annual Ball.

Feb. 26th.—Meeting of the Society of Women Veterinary Surgeons at the Royal Veterinary College, N.W.1, 2 p.m.

Aug. 8th to 13th.—Fourteenth International Veterinary Congress, Central Hall, Westminster, and Church House, Westminster, London, S.W.1.

* * * *

CITY OF EDINBURGH

Post of Assistant Veterinary Inspector

Intending applicants for this appointment are advised to communicate with the General Secretary, N.V.M.A., 36, Gordon Square, London, W.C.1. It is hoped that no member of the Association will attend for interview before responding to this request.

Fees for Lectures given by Members of the Veterinary Profession at Agricultural Colleges and Farm Institutes

The N.V.M.A. is reviewing the present position regarding the terms and conditions of appointments as part-time lecturers at agricultural colleges and farm institutes. Members holding appointments of this nature are invited to send full details to the General Secretary, N.V.M.A., 36, Gordon Square, W.C.1.

* * * * *

XIVth INTERNATIONAL VETERINARY CONGRESS

S.W.V.S. Hospitality for Women Delegates

It is hoped that a number of women veterinary surgeons from abroad will be among the delegates to the XIVth International Veterinary Congress to be held in London next August.

The Society of Women Veterinary Surgeons wishes to extend its hospitality to them during their stay for the Congress itself and afterwards if they wish to see other parts of the country.

Any member of the Society desiring her name to be included among those willing to entertain one or more of the delegates either during or after the Congress as her guests, is requested to notify the President, Miss M. J. Freak, M.R.C.V.S., 15, Park Avenue, Potters Bar, Middlesex, if possible before the end of March.

* * * * *

Sixty-seventh Annual General Meeting of the N.V.M.A.

As announced in our last issue, conforming to the decision of the Council at its meeting in London on January 7th, the Officers of the Association with representatives of the Central Division, have had a preliminary meeting to discuss the arrangements for the Congress of 1949.

Members of the Association will be aware that the XIVth International Veterinary Congress is to held in London from August 8th to 13th (inclusive). Obviously, it was desirable to fit the arrangements for the N.V.M.A. Congress in with those of the "International" but in these circumstances it is impossible to have an Annual Congress of the normal scope and duration.

The Programme Committee of the International Congress has generously agreed to place facilities and time during the latter part of the "International" week at the disposal of the Association. In addition, the Principal of the Royal Veterinary College has agreed to explore the possibility of having a day of demonstrations, jointly arranged, at Camden Town on Monday, August 15th. It has therefore been decided to hold the 1949 Annual Congress of the N.V.M.A. in London from August 12th to 15th (inclusive).

Most members of the profession will be aware that on instructions from the Permanent Committee of the International Veterinary Congress, the theme of this year's "International" will be the "Role of the Veterinary Profession in the Production of Food for Human Consumption."

This choice of subject leaves the Committee responsible for organising the International Congress little scope to arrange to cover the small-animal side of veterinary practice. It has therefore been decided that the N.V.M.A. Congress, arranged in conjunction with the "International," concentrate on the discussion of clinical subjects, particularly those relating to small-animal practice.

The purpose of this preliminary announcement is to give members of the Association early notice of the proposed arrangements. They are invited to communicate to the General Secretary, N.V.M.A., suggestions as to subjects and contributors, from both home and overseas countries, so that a programme specially attractive to clinicians and worthy of British veterinary science be staged on this important occasion.

* * * * *

N.V.M.A. Membership Subscription

The attention of members is drawn to the following Article of Association of the N.V.M.A.:—

> 35. During the first week of March in each year, notice shall be sent to all members whose subscriptions shall be unpaid. Should the subscription of any member remain unpaid by the 30th day of June, he shall cease to be entitled to receive the publications of the Association or to attend or vote at any General Meeting but shall remain legally liable for his subscription. If the subscription of a member shall be in arrear for one year he shall cease to be a member of the Association.

In the past, through failure to pay their subscriptions when due, the Association has been in the unfortunate position of having to remove the names of a number of members when it had been only a matter of inadvertence that the subscription had not been paid. The Officers of the Association will be pleased if this position can be avoided in future by members recognising the need to have their subscriptions paid in good time.

The majority of members find a banker's order the most convenient method of payment, and the General Secretary will be glad to send one of these forms to any member desirous of adopting this system.

* * * * *

PERSONAL

Births.—Hayes.—On January 22nd, 1949, at the Fielding Johnson Private Hospital, Leicester, to Joan (*née* Gilbert), and Harry Hayes, M.R.C.V.S., Leicester Road, Hinckley, Leics., a third son, Christopher.

Sharman.—On January 20th, 1949, to Kathleen Hardy, wife of G. A. M. Sharman, B.Sc., M.R.C.V.S., Norland Cottage, Woodside Road, Banchory, Kincardineshire, a daughter.

* * * * *

Forthcoming Marriage.—Arnold—Sharp.—The engagement is announced between Roger Malcolm Arnold, B.Sc., M.R.C.V.S., second son of Mr. and Mrs. G. T. Arnold, of Chalkwell House, Sittingbourne, Kent, and Prudence, younger daughter of Mr. Thomas Sharp and the late Mrs. Sharp, of Greenwich, Christiana, Jamaica, B.W.I.

* * * * *

Sir Frank Ware.—In our issue of January 15th we intimated that Sir Frank Ware had entered the Tropical Diseases Hospital in Devonshire Place for the treatment of sleeping sickness. We now are glad to be able to state that the condition has responded well. Sir Frank was discharged from hospital on Wednesday of last week and except from some slight disability in one leg, seems to have made a good recovery. He will remain under observation for some time, but this, he hopes, will not prevent his taking up again his commitments in this country.

* * * * *

Holiday abroad—opportunity for veterinary surgeon's son. Through the President of the Danish Veterinary Association, the N.V.M.A. has been asked if the son of a veterinary surgeon in England—aged about 17 years—would like to go to Denmark for a visit to the home of a Danish civic veterinary health officer and, in return, have his 17-year-old son to stay in Britain in July of this year. The English boy could go to Denmark at any time he might like to arrange. Will any interested member please get in touch with the General Secretary quickly about this, when arrangements will be made to put the two boys' families in touch with one another.

* * * * *

R.C.V.S OBITUARY

Dykins, William Alfred, M.R.C.V.S., Major late S.A.V.C., Director, Municipal Abattoir, Durban, Natal, South Africa. Graduated Liverpool, July 16th, 1910, died November 21st, 1948.

* * * * *

East Midlands Division, N.V.M.A.

(Formerly Derbyshire Veterinary Association)

At a meeting of the Derbyshire Veterinary Association held on January 26th, it was decided that the name of the Association be altered and that it now be known as the East Midlands Division, N.V.M.A.

The Hon. Secretaryship of the Division, of course, remains unchanged, and as heretofore, communications should be addressed to Mr. W. H. Carr, B.V.Sc., M.R.C.V.S., of 43, Park Road, Birstall, Leics.

* * * * *

ARTIFICIAL INSEMINATION

Committee on Exports and Imports of Cattle Semen

The Minister of Agriculture and Fisheries and the Secretary of State for Scotland have appointed a Committee with the following terms of reference:—

"To advise on the considerations which should govern the granting of licences for the export and import of cattle semen for the purposes of artificial insemination and on any other problems related thereto."

The Committee is constituted as follows:—

The Rt. Hon. Lord Oaksey, D.S.O. (Chairman), Colonel S. E. Ashton, O.B.E., T.D., J.P., Sir John Barlow, Bt., J.P., M.P., Dr. J. Hammond, C.B.E., M.A., F.R.S., E. O. Jones, Esq., Alexander Keith, Esq., Professor Wm. C. Miller, M.R.C.V.S., F.R.S.E., Duncan M. Stewart, Esq., W. R. Trehane, Esq., and W. J. Wright, Esq.

The Secretary to the Committee is Mr. R. Harding Wynne, of the Ministry of Agriculture and Fisheries, 14, Chester Terrace, Regent's Park, London, N.W.1.

BIOGRAPHICAL NOTES

Lord Oaksey.—Lord of Appeal; British President of International Tribunal, Nuremberg, 1945; Past President of the English Guernsey Cattle Society.

Colonel S. E. Ashton.—Past President of the Dairy Shorthorn Association and of the Shorthorn Society; Member of the Goodwill Agricultural Mission to South America, 1947; Chairman of the Livestock Sub-committee of the Bucks. C.A.E.C.; Chairman of the Advisory Committee of the Little Horwood Cattle Breeding Centre.

Sir John Barlow.—Chairman of the Licensing Sub-committee of the Central Advisory Committee on Artificial Insemination for England and Wales; Chairman of the Advisory Committee of the Tarporley Cattle Breeding Centre; Partner, Thos. Barlow and Bros.; Director, Union Bank of Manchester and other companies; Breeder of British Friesian Cattle.

Dr. J. Hammond.—Reader in Agricultural Physiology, Cambridge University, and Physio ogist, Animal Nutrition Institute, University of Cambridge; Member of the Central Advisory Committee on Artificial Insemination for England and Wales; has studied and advised on animal husbandry in Canada, U.S.A., Europe, Africa, and U.S.S.R.

E. O. Jones, Esq.—Member of war-time Goodwill Mission to U.S.A.; former judge at Palermo Show; Breeder of Hereford cattle.

Alexander Keith, Esq.—Secretary of the Aberdeen Angus Cattle Society, on whose behalf he has travelled extensively abroad; Breeder of Aberdeen Angus cattle.

Professor Wm. C. Miller.—Director of Equine Research Station, Animal Health Trust; Courtauld Professor of Animal Husbandry, Royal Veterinary College, 1935-46; Member of the Central Advisory Committee on Artificial Insemination for England and Wales.

Duncan M. Stewart, Esq.—Member of Hill Farming Advisory Committee for Scotland and of Hill Farm Research Committee of the Scottish Agricultural Advisory Council; Chairman of Hill Farming Sub-committee of the Central Scotland Agricultural Executive Committee; President of Highland Cattle Society; Breeder of Beef Shorthorn and Highland cattle.

W. R. Trehane, Esq.—Member of the Milk Marketing Board; Breeder of British Friesian cattle.

W. I. Wright, Esq.—Chairman of the Scottish Supervisory Committee on Artificial Insemination; Member of the Agricultural Research Council, of the Scottish Agricultural Advisory Council, and of the Scottish Milk Marketing Board; Past President of the National Farmers' Union of Scotland.

* * * * *

FIFTH INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY

Mr. R. E. Glover, Hon. Secretary of the British National Committee of the above Congress, informs us that the date of the Congress has been changed to April 22nd to 29th. Delegates and members who intend to take part in the Congress should notify Professor N. R. Belger, Taksin, Siraserviler 75/3, Istanbul, Turkey, or the Hon. Secretary, British National Committee, immediately.

A boat will leave Marseilles on Friday, April 15th, arriving Istanbul on Thursday, April 21st. On the return journey a boat departs on Friday, April 29th, and arrives Marseilles Wednesday, May 4th. Members who wish to travel by air will leave London on Tuesday, April 19th, arriving Istanbul on Wednesday, April 20th. They will reach London after the Congress on Sunday, May 1st.

Full particulars of itineraries and hotel accommodation can be obtained from Messrs. Thos. Cook & Son, Ltd., Berkeley Street, London, W.1. As accommodation in Istanbul is limited, early booking is advisable.

* * * * *

Distemper in Dogs

We reproduce below an editorial article on the above subject which appeared in *The Times* on January 11th, together with subsequent correspondence.

The article commemorates the 21st anniversary of the culmination of the work of *The Field* Distemper Fund's investigations in demonstrating the possibility of preventing distemper in dogs, and we feel that all our readers will be glad to see this tribute to the work of the pioneers in this field.

Following is the editorial:

If dogs kept anniversaries, then they might well be holding high revel at the moment. It is just 21 years since the claim was made that, as the result of experiments on ferrets, dogs could be completely immunised against distemper. Investigation into what the late Sir Theodore Cook called "the subtle virus" of this grave and often fatal disease had been organised by the Medical Research Council in 1923 with funds provided by *The Field* Distemper Council. This mass scientific attack on the worst ill to which dogs of all breeds are heir was the first of its kind, but medical and veterinary workers, going back at least to Jenner, had concerned themselves with the ravages of distemper. It was used, before diagnosis grew more precise, as a label to cover various kinds of mortal sickness and even to-day, it may be held responsible for casualties due to other causes. It remains in its own right a hazard to which, more than any other serious threat to health, dogs are exposed. Anyone who has watched it at its worst will agree that there is grim realism in the expression "sick as a dog." Utter dejection and patent misery, visible and painful signs of distress to nose and eyes and a sort of St. Vitus's dance are among the symptoms that have shown that thousands of puppies were about to end their short lives.

Twelve couple of the Puckeridge hounds were treated in February, 1928, distemper broke out in the kennels in April, and, while none of the protected hounds went down, 35 couple of the rest did so and 11 couple died. The tests on ferrets—earlier ones on hedgehogs had drawn blank—led to the finding of a virus with living organisms, of a vaccine with killed organisms and of an anti-serum from the blood of an animal that had been made strongly immune by the repeated administration of virus. It was stated, early in the 30's, that the incidence of distemper among 650 hounds, belonging to 23 packs, which had certainly been exposed to infection, was only 1·4 per cent. and the death-rate only 0·3 per cent. Young hounds which were not inoculated almost all went sick and half or more of them died.

Treatment when puppies are at walk is now common practice in kennels. It has been authoritatively said that, apart from keeping down the death-roll, avoidance of the heavy physical strain of getting through distemper so improves the young entry when it reaches adult life that several seasons may be added to the career of a hunting hound. The process is still expensive, for, with veterinary fees, it costs two guineas or more, and, for that reason alone, some dog owners leave their animals to take a chance. A new anxiety has arisen in the last few years from another virus disease, hard pad, which has reached the proportion of an epidemic. Much research remains to be done on dog diseases, but the achievement of *The Field* Distemper Council will, whatever discoveries lie ahead, deserve to be ranked as a triumph for men—and for dogs. Canine celebrations this winter might include a congratulatory message to the medical profession, which learned, in the course of the work on ferrets, that they can be infected by the virus of human influenza. Another message, less warm in tone, might go to Westminster and Whitehall, where, until last December, it seemed right, no doubt for good reasons, but hardly for ones easy to explain in kennel circles, that veterinary medicines, including distemper vaccine, should be liable to purchase tax. The highest commemorative honours would go to Sir Patrick Laidlaw and to Major Dunkin, neither, alas! alive to see the fruits of their labour, and to Professor Dalling and other pioneers who did so good a turn to an animal that deserves so much from his master.

. . . . .

The correspondence relating to the above is as follows:

Issue January 14th.

Sir,—May I express appreciation of your leading article on "Distemper in Dogs" appearing in your issue of to-day? While it constitutes an admirable historical record in summary, I feel that ignorance of the manner in which conditions have changed in certain directions may give rise to a wrong deduction that this work was carried out entirely by medical scientists. For instance, 20 years ago the Agricultural Research Council and the Animal Health Trust did not exist, and consequently when *The Field* raised a fund, in the main from those interested in dogs, the money was given to the Medical Research Council to enable them to do the work. This the council did, effecting an admirable co-operation between medical and veterinary workers. The kennels were originally planned by Professor J. B. Buxton, M.R.C.V.S., and, as you yourself have stated, of the three pioneer investigators Major Dunkin and Professor Dalling are both veterinarians. The last thing I wish to do is to detract from the credit which is due to my friend, the late Sir Patrick Laidlaw,

Another point which I think might usefully be emphasised is that this work was financed by funds raised voluntarily from those most interested, and in this way it resembles the efforts now being made by the Animal Health Trust through its Canine Research Station to continue the work so well begun by *The Field* Distemper Fund on the virus diseases of the dog. As your leading article states, it would appear that there are other virus diseases simulating distemper—as has been indicated by Dr. R. F. Montgomerie, M.R.C.V.S., and his co-workers at the Wellcome Foundation—which still baffle us, and on which further research is necessary before we can be certain that all the ills originally diagnosed as distemper can be effectively prevented.

Yours faithfully,
W. R. WOOLDRIDGE,
Director, Animal Health Trust.

232-235, Abbey House,
Victoria Street, S.W.1.
January 11th, 1949.

Issue January 19th.

Sir,—May I be allowed to comment on the following statement in your issue of January 11th: "A new anxiety has arisen in the last few years from another virus disease, hard pad, which has reached the proportion of an epidemic"? Twelve months ago, at a meeting of the Pathological Society of Great Britain and Ireland,

two members demonstrated a disease of dogs to which they gave the name hard pad; they claimed that it was caused by a virus. Opponents of the claim thought that proof of a virus causation was lacking and affirmed that the disease had already been described as the *beta haemolytic streptococcus* infection (widely known as B.H.S.), complicated by bowel parasites. You, Sir, may recall that the research which defined the B.H.S. infection, its differentiation from distemper virus infection, and the methods for its preventive and curative treatment was fully surveyed by your Kennel Correspondent in your issue of July 31st, 1939.

During the past ten years the B.H.S. infection has been recorded in many countries from India to America. Among so many students of the disease differences in thought and method are inevitable; they are portents of progress. I fail to see any cause for anxiety among dog owners. The name ultimately given to the disease is of minor importance in view of the fact that effective methods for its prevention and cure have been available for at least ten years. Many afflicted dogs have found proof in what appears to be a bone of contention among experts.

I have the honour to be, Sir, your obedient servant,

529A, Finchley Road, TOM HARE.
N.W.3.

Issue January 28th.

Sir,—The columns of *The Times* are not the proper place for controversy on scientific subjects, but Dr. Hare's letter requires an answer. A group of workers in the Wellcome Physiological Research Laboratories, of which I am director, have been investigating the disturbing increase in cases of encephalitis of dogs for some years. They have established the existence of a disease which is distinguishable microscopically from the encephalitis due to the true dog distemper virus which they have called hard pad disease, because it is accompanied by thickening of the horny layer of the skin of the pads. It is transmissible to ferrets, which also develop corns. The infective agent passes through filters which hold back streptococci. There is some clinical evidence that the serum of dogs injected with the causal agent will protect "contacts" from the disease. β haemolytic streptococci are not found in animals suffering from the disease, and Dr. Hare has not described any clinical condition which resembles the disease. There are many points still to be cleared up, but there is little doubt that the cause is a virus and not a streptococcus. A preliminary account has been published by A. B. MacIntyre, D. J. Trevan, and R. F. Montgomerie in *The Veterinary Record*, vol. 60, p. 635. The work has only been possible through the unstinted collaboration of many veterinary surgeons who have encouraged the investigators to believe that their findings are correct.

Yours faithfully,

J. TREVAN.

Wellcome Physiological Research Laboratories,
Langley Court, Beckenham, Kent.

* * * * *

NEW FOWL PEST ORDER

EASING OF RESTRICTIONS ON THE SALE, EXHIBITION AND MOVEMENT OF LIVE POULTRY

Poultry keepers in a wide area of southern, eastern and midland England have for some months past been severely restricted in disposing of their surplus live poultry and in moving poultry from place to place, while the holding of poultry shows in that area, except for a few specially licensed shows of national importance has been prohibited. By a new Order, which came into operation on February 1st (The Live Poultry (Regulation of Sales, Exhibitions and Movements) (Amendment) Order, 1949) the application of those onerous restrictions is limited to two fairly small areas—one around London and including, in addition to the Metropolis, the whole of Middlesex and parts of Herts, Essex, Kent and Surrey, and the other comprising Warwickshire, the southern half of Staffordshire and Birmingham. The need for the maintenance of restrictions in these areas arises from the continued occurrence there of outbreaks of fowl pest, from which the remainder of the country is largely free.

Poultry must not be moved out of the two areas mentioned and birds that are being moved between two places outside those areas must not pass through either of them.

The provisions imposed by an earlier Order, relating to the keeping of records by auctioneers and poultry dealers, the cleansing of receptacles used for poultry at markets and the prohibition on the consignment of poultry to railway stations, which affect the whole of Great Britain, will remain in force. Moreover, the movement of poultry into the area comprising Scotland, Northumberland, Durham, Cumberland, Westmorland and the Furness District of Lancashire is still prohibited.

Copies of the new Order and of the earlier Order which it amends, namely, the Live Poultry (Regulation of Sales, Exhibitions and Movements) (No. 3) Order, 1948, can be obtained free of charge on application to the Ministry of Agriculture, 28-32, Chester Terrace, Regents Park, London, N.W.1.

* * * * *

THE ANIMAL HEALTH TRUST

The Bloodstock Industry Committee of the Animal Health Trust has received a donation of £1,000 from the Jockey Club; £250 from Hurst Park Club; and £50 from Sandown Park Club. Sir Victor Sassoon has also forwarded his annual subscription of £200 and owners of brood mares are continuing to send in their annual contributions from the £1 per mare scheme devised to help the activities at the Equine Research Station at Newmarket.

* * * * *

V.V.B.F. LADIES' GUILD ANNUAL DANCE

SUCCESSFUL FUNCTION AT DUMFRIES

The members of the Ladies' Guild of the Victoria Veterinary Benevolent Fund held their annual dance in the Cairndale Hotel, Dumfries, on January 14th. The weather was favourable and the function was well supported by members of the profession and their friends from Cumberland, Wigtownshire, Kirkcudbrightshire and Dumfriesshire. Major Niel Macpherson, M.P. for Dumfriesshire, was the guest of the evening.

The dance went with its usual gay swing and the only complaint was that the time passed much too quickly. The dance, which was originally held to support the funds, seems to have become a real annual social function.

Mr. McQueen, of W. & J. Dunlop, Ltd., Dumfries, presented a beautiful dressed sheep-skin, which realised over £18. A sum of approximately £60 will be passed on to the funds of the Ladies' Guild.

* * * * *

POST-GRADUATE SCHOLARSHIPS IN HUSBANDRY, ETC.

The Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland announce that they propose to award, for the academic year beginning October 1st, 1949, or earlier, a limited number of post-graduate scholarships in Husbandry, Agricultural Economics, Statistics, and Agricultural and Dairy Engineering.

The closing date for applications is May 15th, 1949.

Further particulars may be obtained from the Secretary, Ministry of Agriculture and Fisheries, 1/4, Cambridge Terrace, Regent's Park, London, N.W.1, or the Secretary, Department of Agriculture for Scotland, St. Andrew's House, Edinburgh, 1, according to the country of residence. Applicants resident in Northern Ireland should apply to the Ministry of Agriculture and Fisheries, 55, Whitehall, London, S.W.1.

* * * * *

Transit of Animals by Air

A Conference was held at the headquarters of the R.S.P.C.A. on January 11th, when representatives of four leading air companies, the Ministry of Agriculture, and Spratts Patent, Ltd., discussed this subject with R.S.P.C.A. officials. The Chief Secretary of the Society said that they were concerned at the number of wild animals and tropical birds brought into the country, and wished to ensure their welfare. Major Hancock, Chief Veterinary Officer to the R.S.P.C.A., whose report on this matter was before the Conference, stated that under present conditions it is left to the employees of the air companies to remove animals from crates and exercise them on their own initiative. It had been decided that special premises, for livestock arriving at airports, which would satisfy the quarantine regulations of the Ministry of Agriculture and Fisheries were desirable. A letter was subsequently sent to Mr. Lloyd, Deputy Chief Veterinary Officer of the Ministry of Agriculture and Fisheries, informing him that the Society would be willing to staff and help in the cost of the establishment of premises at all main airports, and that quarantine stations could be run by the R.S.P.C.A. with fully trained attendants in charge. Mr. Lloyd had subsequently written to say that discussions were still going on, and he had given details of temporary kennel accommodation available at Northolt, Prestwick, Hurn and Heath Row. For the Ministry of Civil Aviation it was stated that there is no money or land available for the purpose Mr. Grosvenor, for Spratts Patent Ltd., stated that in view of the number of animals kept in enclosed boxes until removal licences were available, premises of this type on the airport itself are very necessary. He added that many people entering this country were not in a position to pay the fees of the kennels near the airports. It was agreed by the meeting that efforts should be concentrated on obtaining facilities at Heath Row in the first place.

Factors Affecting Animals During Travel

The following represents, in an abbreviated form, the report prepared by Major Hancock.

(*a*) *Height.* In general, most species seem capable of enduring greater heights before evincing distress than does man. As might be expected, birds are probably the best subjects at high altitudes. From a report furnished by the Air Transport Association of America on altitude tolerances of experimental animals the conclusion is reached that all animal life is very resistant to changes in altitude, and it is almost certain that short exposure to altitudes up to 20,000 ft. should not prove permanently harmful to any healthy animal. Species altitude tolerances are given as follows: cats (normal) 24 000 ft.; dogs 25,000 ft.; guinea-pigs (adult) 30,000 ft.; rabbits (adult) 27,000 ft.; and sheep (adult) 30,000 ft.

(*b*) *Temperature.* The response of any animal to temperature changes is contingent on the humidity of the atmosphere and the length of time of exposure to a given temperature. . . It is wise to keep within the limits of human endurance when considering the temperature conditions under which animals are to fly.

(*c*) *Age.* It seems to be agreed on both sides of the Atlantic that young, recently born animals are much more tolerant of adverse conditions than are adults.

(*d*) *Species Idiosyncrasies. Birds*, as might be expected, give little trouble in transport. *Fish* transported in water can undergo suffocation through loss of the oxygen dissolved in the water. The practical measure to be taken, therefore, is to reduce the population per gallon of water to half that suitable at sea level. This, of course, is only necessary when the high altitude is to be experienced for an appreciable time.

Horses. Race-horses have successfully crossed the Atlantic and mules were carried during the recent war over the "hump" of the Himalayas between India and China, and were even parachuted into action with troops. It seems agreed that horses under peace time conditions must be boxed in a special crate which is then lifted into the aircraft. This alone will prevent damage to the structure of the aircraft by kicking.

Greyhounds. The recent alarming series of deaths in greyhounds travelling on a relatively short journey from Dublin to Northolt gave rise to special enquiry. *Post-mortem* reports received from veterinary surgeons on a number of cases seem to indicate an apoplectic condition, induced by frenzy, as being the cause of death. The outcome of the investigations made for Aer Lingus was a re-designing of the crates used, and a recommendation that wood was a more suitable material for them than aluminium. I have since noted that the Americans consider that the saving in weight when an aluminium crate is used, pays for the crate in "three trans-Continental flights." It may, therefore, prove to be worth while returning to aluminium crates but with the elimination of their objectionable features, which include defective arrangements for the dog to see and the drumming of the large aluminium sheets that form the sides of the crates. The latter may be neutralised in some such way as is done with large panels in cars.

Mr. Rew (for the Ministry of Agriculture) added that a small percentage of dogs died in quarantine from pneumonia shortly after arrival by air.

* * * * *

LEGAL NOTES

Cat neglected in "Hospital."—At Stockport, on December 16th, John Smith, aged 20, of Ashfield Road, Cheadle, proprietor of an animal hospital, was fined £5 and ordered to pay £5 5s. advocates' fee and £4 19s. costs for causing unnecessary suffering to a cat by not providing it with sufficient food.

The owner of the cat, Mrs. Dorothy Preece, of Thorn Road, Bramhall, said when she sent the cat to Smith's kennels it was fat. When it came back she could not recognise it.

A veterinary surgeon said the animal had been mishandled and neglected.

. . . . .

A Market Harborough butcher has been fined a total of £145, or three months' imprisonment, on summonses arising out of the supply of condemned meat to his customers. The meat was marked with a green dye and should have been sent to a glue factory.

* * * * *

Corrigenda

Conditions of Employment of Young Graduates

We greatly regret that, through our printers' failure to "bring up" the line, the above heading was virtually omitted from the notification inserted at the end of the Correspondence Column of our issue of last week, that further letters on the subject of the conditions of employment of young graduates will be published in the supplement. Readers are referred to the corrected announcement made in the corresponding position in this issue. We apologise to them, also to Mr. R. Glave Saunders, for the confusion arising from the apparent, though obviously from the wording erroneous, reference to the subject of his letter, immediately preceding, entitled "An Ethical Plea."

. . . . .

Miss Sheila Stainton writes to dissociate herself from the remark ascribed to her in the report of the discussion of Mr. Parry's paper, "Epileptic states in the dog with special reference to canine hysteria," in the issue of the *Record* of January 15th (**61.** 31). Miss Stainton was not present at the meeting of the Central Veterinary Society at which this paper was discussed.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents are requested to write as briefly as possible.

DISPOSAL OF ANIMAL CARCASES

Sir,—I hasten to congratulate Mr. Peter Kiddle on his excellent contribution in the *Record* of December 6th, on Carcase Disposal Centres.

The time for some improvement in the organisation of these premises is long overdue. It is quite probable that, as stated recently by the Parliamentary Secretary to the Ministry of Food, enforcement officers have paid special attention to knackers' yards in recent months. This does not envisage, however, the obvious essential improvements in the knacker's yard and its traffic which should be carried out in the interests of Public Health and Veterinary Science.

I think of three of these premises I visited in recent years where conditions were appalling.

The suggestion that these premises should be brought under the control of the research or teaching centres is an excellent one. Not only would a wealth of material be made available for study but adequate and well qualified supervision would then be assured.

One hesitates to add to the burdens of the N.V.M.A., but an investigation into this problem would seem to be well worth while at the present time.

I feel sure some of my former veterinary colleagues in Local Authority Service would be glad to submit their views.

Yours faithfully,

School of Veterinary Medicine, F. H. Manley.
Auburn,
Alabama.
January 22nd, 1949.

* * * * *

MEAT HYGIENE

Sir,—I thank Professor Ginsberg and Dr. Robertson for their reply to my letter, but I must confess I still do not see how they can so easily dismiss the "factory type" abattoir, especially in view of pre-war plans to establish such a centre here. It is hardly necessary for me to say that there are men in this country who have a fairly good knowledge of Continental abattoirs, and no one disputes the experience and qualifications of your correspondents, but neither it it possible to ignore pre-war Government reports and recommendations.

Yours faithfully,

Brierley Hill, D. J. Anthony.
Staffs.
January 28th, 1949.

* * * * *

Conditions of Employment of Young Graduates

Further letters have been received on this subject. Since there is a tendency to quote from a document which has not appeared in our open columns, in future such letters will be published in the Supplement.

The Officers will welcome contributions on this subject, either for publication in the Supplement or for reference to the appropriate committee, to which all these letters, published or unpublished, will be submitted for consideration.

Advertiser's Announcement

Concentrated Lamb Dysentery Serum

Evans Medical Supplies Ltd. are now issuing a new Concentrated Lamb Dysentery Serum with a 2 c.c. dose. Bottles of 50 c.c. (25 doses)—Retail at 27s. each. The Concentrated Serum is effective against both Lamb Dysentery and Pulpy Kidney Disease. The existing Evans Lamb Dysentery Serum (with a 5 c.c. dose) is still available, and will normally be supplied unless the Concentrated form is specified.